

**E**ACH CROP YEAR, grass seed producers are confronted by the perplexing problem of determining when their crop is ready to harvest. If harvested too early, much of the seed is light and immature and can be lost in the cleaning operation. Low seed germination may also result. If the grower waits too long before harvesting, a considerable portion of the potential yield may be lost by pre-harvest seed shatter. Most recommendations suggest delaying harvest until the tips of the panicles start to shatter. However, this stage could be too early or too late, depending upon species, cultural conditions, and weather.

The process of flowering within a single panicle is normally completed within a few days. The time involved within a seed field from the first evidence of flowering to the appearance of the last panicle to flower can consume approximately 30 days. Consequently, panicles in a developing orchardgrass stand do not reach maturity at the same time because they are not all of the same age. Panicle samples, taken at time intervals from a developing seed crop and separated into classes of maturity, result in a near normal frequency curve for any one class of panicle maturity (see Graph 1).

Superimposing seed yields and shatter losses upon a frequency curve for mature panicles in 1960 as shown in Graph 2, indicates that the highest seed yields with minimum shatter losses occur when approximately 50% of the panicles are mature. Nearly identical results were obtained in 1958 trials. For these studies an orchardgrass panicle was considered mature when it exhibited little or no green color among the florets at the base of the panicle and shattering was not evident. Shattering panicles were not included in this maturity class. Some of the panicles in the field had already started to shatter while the very early maturing panicles had already lost most of their seed. After this field maturity stage had been reached for both the 1958 and 1960 crop years, seed yields decreased rapidly along with increasing shatter losses.

The 1958 crop received the last irrigation 24 days prior to the first harvest date. Consequently, the stand was in the early stages of stress for lack of soil moisture during the maturing phase of development and the shatter loss curve rose more abruptly than for the 1960 crop—which received the last irrigation 13 days prior to the first harvest date. Daily air temperatures prior to and during the sampling period averaged 16°F higher in 1960 than in 1958. Despite these dif-

## Field Maturity—Seed Yield—Shatter Loss for POTOMAC ORCHARDGRASS AND HARDINGGRASS

Seed yields are highest when 50% of the panicles are mature in orchardgrass and 11% mature in hardinggrass.

ferences in environment during crop maturing, maximum seed yield occurred at the same position on the curve of field maturity both years.

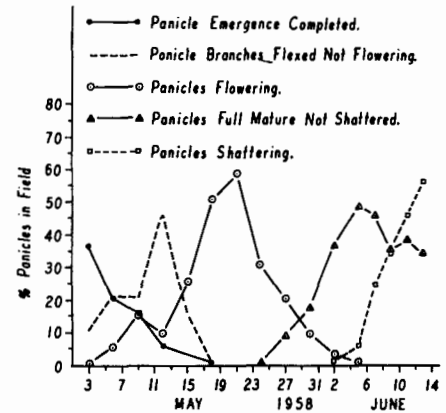
As shown in Graph 3, the largest yield of hardinggrass seed with the least shatter loss occurred when approximately 11% of the panicles were fully mature (straw colored, with little or no green at panicle base). This point coincides with other maturity classes such as when 25% of the panicles were one-half to three-fourths mature or 44% of panicles were one-fourth mature. Under the weather conditions experienced in 1960 the percent of fully mature panicles rose so abruptly in relation to time that this class of maturity was not considered to be a reliable measurement unless used in conjunction with one of the other maturity classes.

This method of determining the optimum harvest period can be successfully used only if the seed producer is willing to sample fields regularly during the later phase of panicle development. By taking a sufficient number of samples at random throughout a field a seed grower can average out irregularities in maturity rates due to soil and fertility variations, stand densities, and water application and drainage problems.

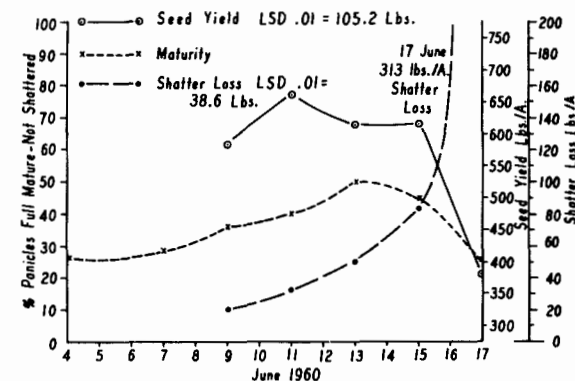
These results indicate a safe range of field maturity of several days when harvesting orchardgrass. On the other hand seed yields decline abruptly with accompanying rapid rise in shatter loss in a short period of time for hardinggrass. The maturing rate of these grasses is influenced by temperature and humidity during this maturation period and grass stands should be carefully observed if above normal temperatures are experienced.

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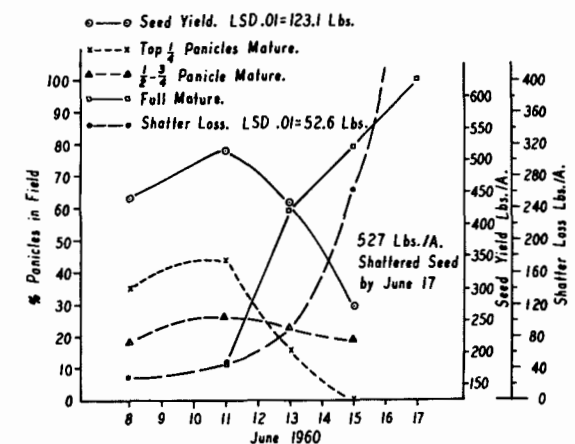
*The above progress report is based upon Research Project No. 1879.*



Graph 1—Frequency curves for panicle maturity classes, Potomac Orchardgrass, 1958.



Graph 2—Percent mature panicles, seed yield and shatter losses in pounds per acre, Potomac Orchardgrass, 1960



Graph 3—Percent of panicles one-fourth mature, one-half to three-fourths mature, field mature; seed yield and shatter losses in pounds per acre, Hardinggrass, 1960.